

Fire Protection Assessment Findings (FPA) Prioritization & Disposition Process

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Fire Protection & Assurance



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Outline

- **Sandia National Laboratories (SNL)**
- **DOE Order Requirements**
- **Fire Protection Assessment (FPA) Frequency and Tasks at SNL**
 - **Findings and Observations**
 - **Consequence Bin Categorization**
 - **Cost Bin Determination**
 - **Benefit Bin Determination**
 - **Corrective Action Timeline**
 - **Examples**
 - **Disposition Paths**
 - **Statistics**

Sandia National Laboratories (SNL)

- 1,000+ Buildings
- 7.3M gross ft²
- Sites in New Mexico, California, Nevada, Hawaii
 - Also, leased facilities and permitted land
- Replacement Plant Value (RPV) of \$4.4B



DOE Order Requirements for FPAs

- *DOE Order 420.1B Chg 1, Facility Safety, Attachment 2, Chapter II. Fire Protection, 3.b(14):*
 - “*Periodic* facility assessments on a schedule as directed by DOE”
(Note: frequency not specified)
- *DOE Order 420.1C, Facility Safety, Attachment 2, Chapter II. Fire Protection, 3.d(1)(h) and 3.f(2):*
 - “Facility and fire hazard analysis (FHA) assessment programs”
 - “Fire protection building assessments must be conducted:
 - *annually*, or at a frequency with appropriate justification approved by the DOE head of field element, for buildings with a replacement *value in excess of \$100* million, facilities considered a high hazard, or those in which vital programs are involved, as defined by the responsible DOE authority; and,
 - *at least every three years*, or at a frequency with appropriate justification approved by the DOE head of field element, for remaining *low and ordinary hazard facilities*”

FPA Frequency and Tasks at SNL

- FPA Frequency
 - 1-Year: Nuclear Facilities
 - 3-Year: DOE Mission Critical buildings; all H, F, S Occupancies > \$10M RV
 - 5-Year: All buildings < \$10M RV not on 1 or 3 year schedule; A, B Occupancies > \$10M RV with no H, F, or S Occupancies
 - *Future state*: Frequency based on Fire Risk Index (FRI)
- 4-Part Fire Protection Assessment (FPA):
 - Inspection, Testing, and Maintenance Check
 - Performed site-wide annually
 - Hazardous Materials Maximum Allowable Quantity Analysis
 - Performed per FY schedule
 - *Future state*: Performed site-wide annually
 - Pre-Incident Plan
 - Reviewed per FY schedule
 - Either the Egress, Notification, Detection, Separation, and Suppression (ENDSS) Survey or the Fire Protection Systems Summary (FPSS)
 - Performed per FY schedule
- Metrics reported to Sandia Field Office (SFO) quarterly

Findings and Observations

■ Finding^{1, 2}

- A statement of fact based on objective evidence documenting an act or condition that **does not meet** a written requirement
 - DOE O 420.1B Chg 1, Facility Safety or DOE O 420.1C, Facility Safety
 - DOE-STD-1066-99, Fire Protection Design Criteria or DOE-STD-1066-2012, Fire Protection
 - Corporate Policy, FAC100.2.4, Manage Fire Protection Requirements
 - Codes & standards (e.g. IBC, IFC, NFPA, etc.)

■ Observation^{1, 2}

- A statement of fact based on objective evidence documenting an act or condition that **does not violate** a written requirement but that may need improvement, as judged by the auditing/assessing organization



¹ Documented and tracked in an MS Access database

² Prioritized based on consequence, cost, and benefit of compliance

Consequence Bin Categorization

1. *Immediate* Consequence

- a. Serious (life-threatening) human injury given that a fire occurs
- b. This category does not include environmental or property consequences

2. *High* Consequence

- a. Serious (non life-threatening) human injury given that a fire occurs
- b. This category does not include environmental or property consequences
- c. Violation of a building code or one of its invoked codes (fire, mechanical, electrical, plumbing, etc.) in such a way that life safety is significantly compromised and vulnerability for enforcement action under the worker safety and health aspects of 10 CFR 851 is high

3. *Moderate* Consequence

- a. Minor human injury requiring medical treatment, given that a fire occurs
- b. Significant property or environmental damage, given a fire occurs
- c. Vulnerable for enforcement action under the facility safety aspects of DOE Order 420.1B Chg 1, *Facility Safety*, is high

4. *Low* Consequence

- a. Minor human discomfort not requiring medical treatment, given that a fire occurs
- b. Minor property or environmental damage, given that a fire occurs
- c. User or operational inconvenience occurs

Cost Bin Determination

1. Very High
 - $> \$250,000$
2. High
 - $> \$100,000$ and $< \$250,00$
3. Moderate
 - $> \$10,000$ and $< \$100,000$
4. Low
 - $> \$2,000$ and $< \$10,000$
5. Negligible
 - $< \$2,000$

Benefit Bin Determination

		Cost Bins				
		Negligible	Low	Moderate	High	Very High
Consequence Bins	1 – Immediate	Immediate	Immediate	Immediate	Immediate	Immediate
	2 – High	Immediate	High	High	Moderate	Moderate
	3 – Moderate	High	Moderate	Moderate	Low	Low
	4 – Low	Low	Low	Low	Negligible	Negligible

Corrective Action Timeline

1. Immediate Benefit
 - 30 days → URGENT Life-threatening consequences are corrected on the spot or same day
2. High Benefit
 - 90 days
3. Moderate Benefit
 - 180 days
4. Low Benefit
 - 365 days
5. Negligible
 - > 1 year, next project, or never

Finding Consequence Categorization Sandia National Laboratories

System Issue Findings	Consequence Level 4 * (Low)	Consequence Level 3 (Moderate)	Consequence Level 2 (High)	Consequence Level 1 (Immediate)
Egress Issues	Finding does not impact occupant egress (e.g., labeling, exit sign not illuminated, handrails not code compliant, door operation code violation)	Finding impairs occupant egress (e.g., travel distance exceeded, emergency lighting inadequate, exit discharge inadequate)	Finding reflects lack of egress pathway (e.g., insufficient number of exits, missing egress path)	Finding prevents egress (e.g., blocked exit path, locked exit door)
Fire Suppression	Finding does not impact operability of system (e.g., supervision lacking, placards missing)	Finding impairs operability of suppression system (e.g., suppression system inadequate)	Finding reflects absence of required suppression system (e.g., no system installed)	
Hazardous Materials	Finding indicates missing or inaccurate hazardous materials labeling (e.g., NFPA 704 placard missing or incorrectly placed or too small; mixed phase storage in flammable liquid cabinet)	Finding indicates improper storage of hazardous materials (chemicals stored in local exhaust ventilation [LEV] fume hoods; or maximum allowable quantity [MAQ] exceeded for less hazardous materials identified for Risk Level 2)	Finding indicates significant hazardous materials issue (e.g. MAQ exceeded for R4, R3, F4, F3, H4 H3 categories)	Finding indicates Risk Level 2 situation coupled with presence of ignition source (e.g., matches or flares stored in flammable storage cabinet)

Disposition of Findings and Observations Sandia National Laboratories

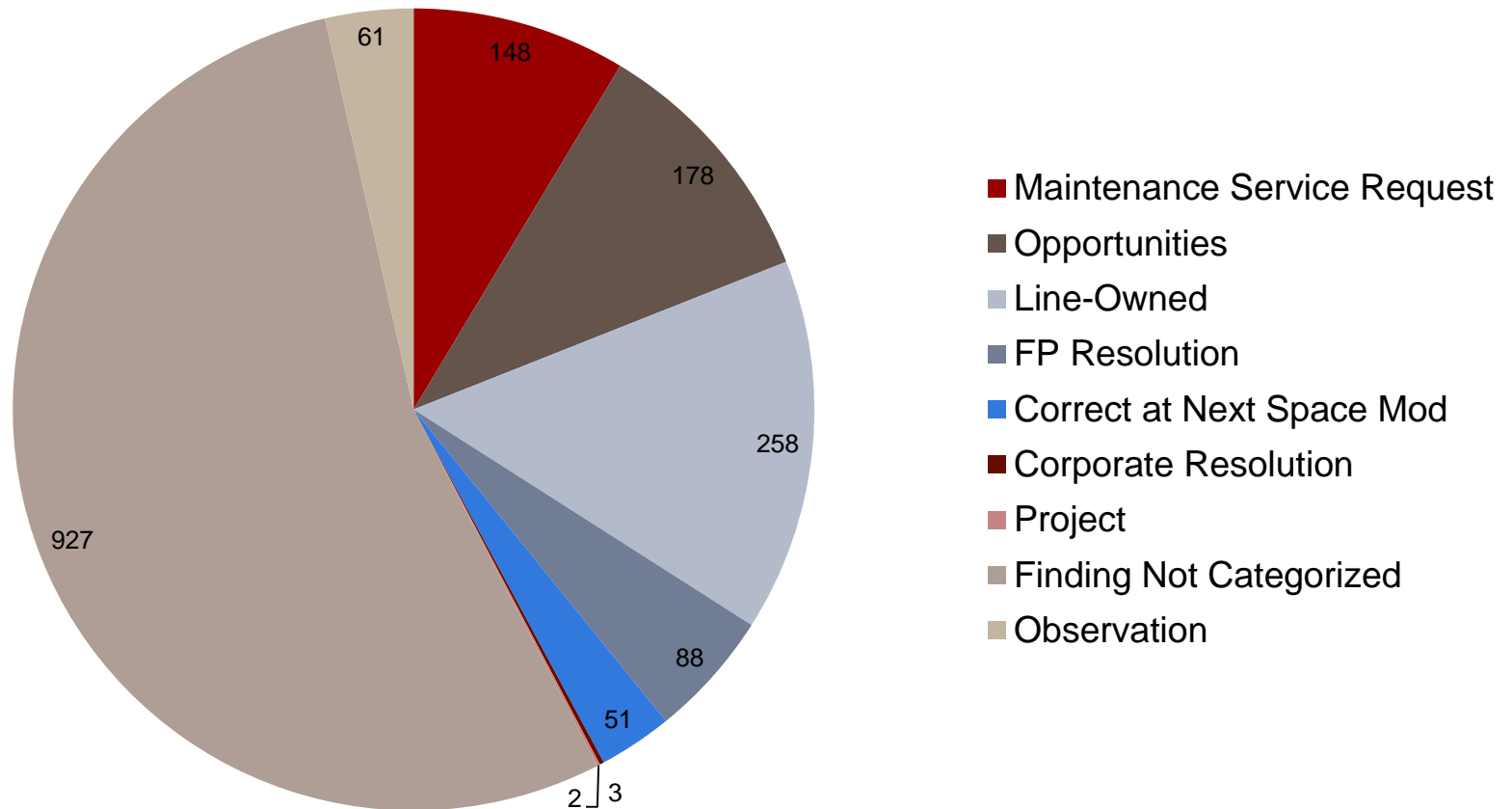
- Disposition Paths
 - Maintenance Service Request (Maximo)
 - Maintenance determines if resources are available to support
 - Historically: < \$2,000
 - Opportunity (Tririga)
 - Completed as funding is available
 - Prioritized fire protection project list
 - Line-Owned
 - Fire Protection Resolution (e.g., Equivalency/Record of Code Decision)
 - Correct at Next Space Modification
 - Corporate Resolution
 - Project
 - Finding Not Categorized
 - Observation: No Action Required

Statistics of Findings & Observations Sandia National Laboratories

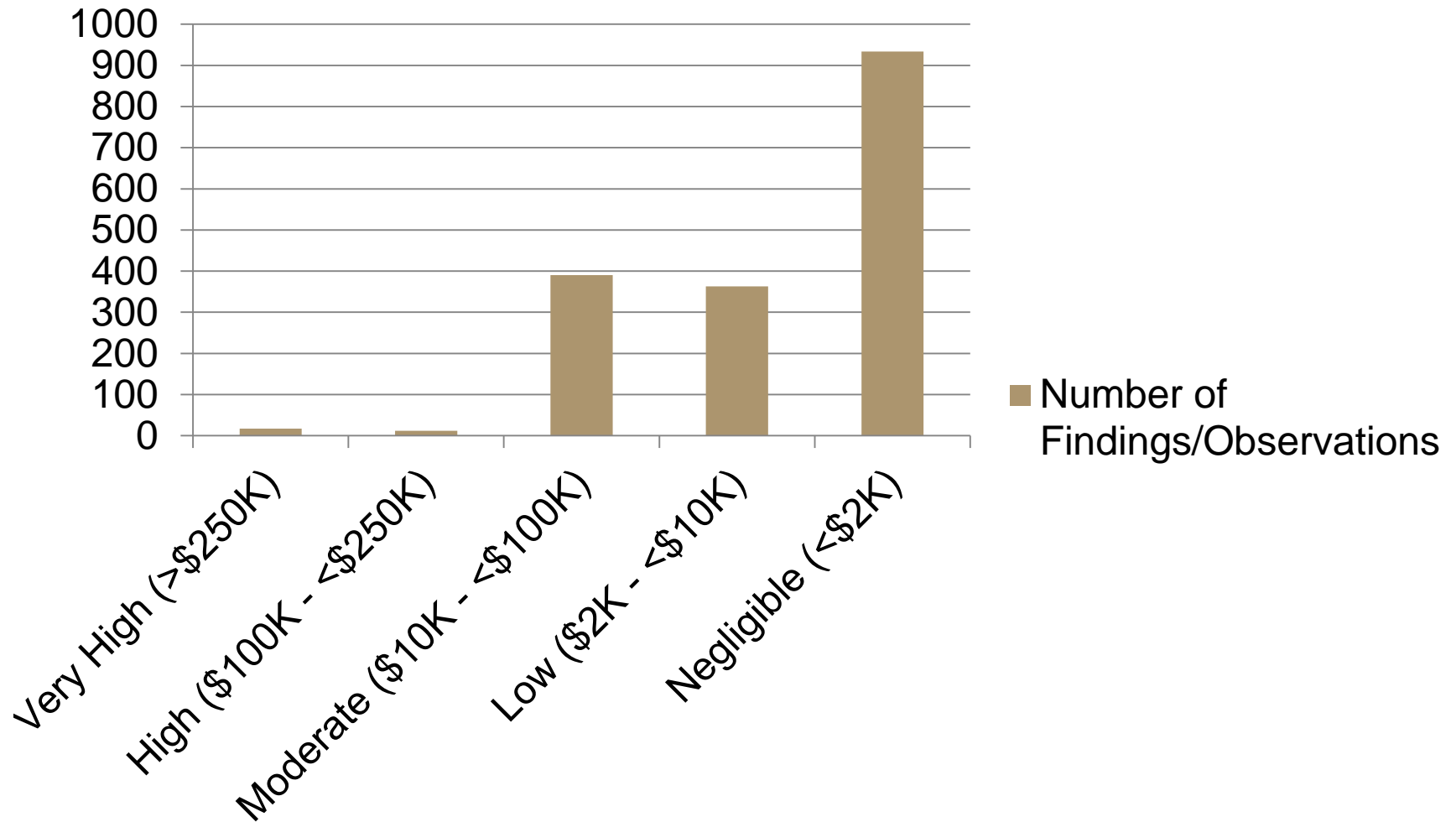
- 1,716 Findings & Observations tracked in MS Access database¹
 - Maintenance Service Request (Maximo) = 148 (8.6 %)
 - Opportunities (Tririga) = 178 (10.4 %)
 - Line-Owned = 258 (15 %)
 - Fire Protection Resolution = 88 (5.1 %)
 - Correct at Next Space Modification = 51 (3%)
 - Corporate Resolution = 3 (0.2%)
 - Project = 2 (0.1%)
 - Finding Not Categorized = 927 (54%)
 - Observation: No Action Required = 61 (3.6%)
- Risk Level Report provided to SFO
 - Specific Buildings
 - Consequence Level 1 & 2 Findings

¹ Data as of April 29, 2014

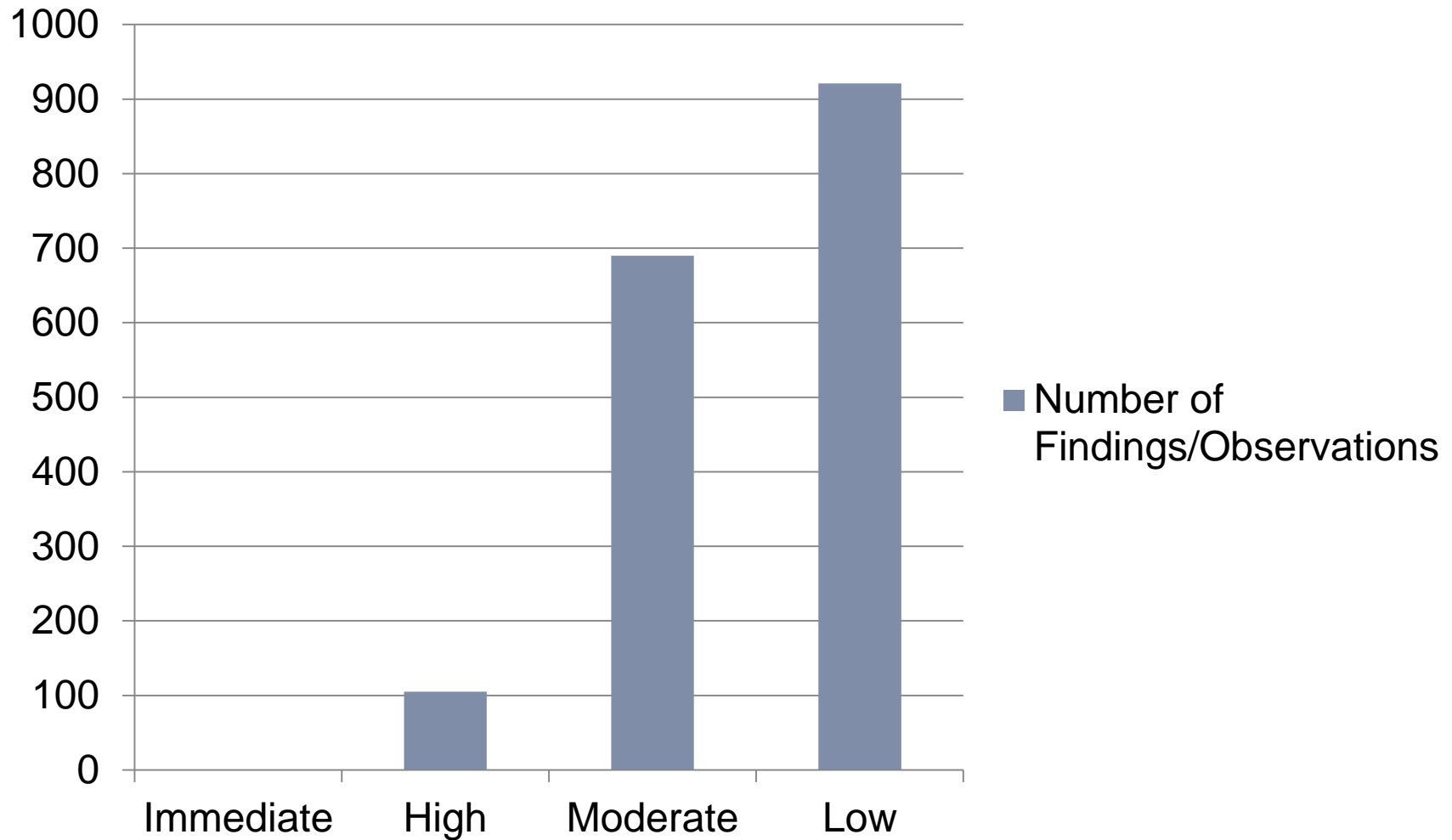
Number of Findings/Observations by Resolution Path



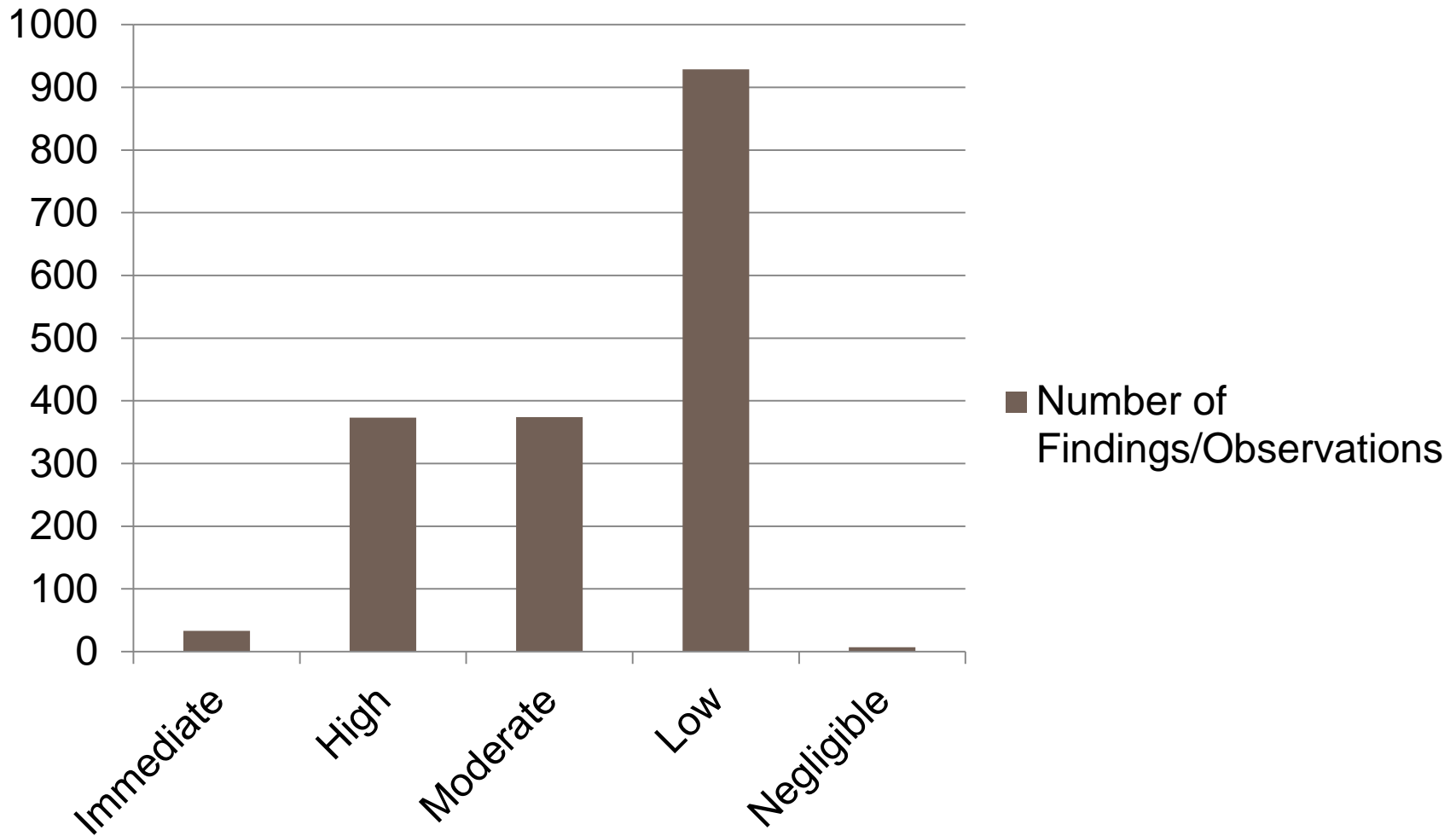
Number of Findings/Observations by Cost Bin



Number of Findings/Observations by Consequence Bin



Number of Findings/Observations by Benefit Bin



QUESTIONS?

Thank you!